

WHAT IS CLAIMED IS:

1. An absorbent material comprising at least in part a cross-linked polymer, said absorbent material having a centrifuge retention capacity as determined by a Centrifuge Retention Capacity Test of at least about 20 g/g and a gel bed permeability under load as determined by a Gel Bed Permeability Under Load Test of at least about 200×10^{-9} cm².
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2. An absorbent material as set forth in claim 1 wherein the cross-linked polymer comprises at least about 75 weight percent anionic polymer.
3. An absorbent material as set forth in claim 1 wherein the absorbent material has a gel bed permeability under load as determined by the Gel Bed Permeability Under Load Test of at least about 400×10^{-9} cm².
4. An absorbent material as set forth in claim 1 wherein the absorbent material has a centrifuge retention capacity as determined by a Centrifuge Retention Capacity Test of at least about 25 g/g.
5. An absorbent material as set forth in claim 1 wherein the absorbent material has a free swell gel bed permeability as determined by a Free Swell Gel Bed Permeability Test of at least about $2,000 \times 10^{-9}$ cm².
6. An absorbent material as set forth in claim 5 wherein the absorbent material has a free swell gel bed permeability as determined by the Free Swell Gel Bed Permeability Test of at least about $3,000 \times 10^{-9}$ cm².
7. An absorbent material as set forth in claim 1 wherein the cross-linked polymer comprises at least about 85 weight percent anionic polymer.

8. An absorbent structure comprising the absorbent material set forth in claim 1 and at least one of hydrophilic fibers and hydrophobic fibers.

9. An absorbent structure as set forth in claim 8 wherein the absorbent material is in the range of about five percent to about ninety percent by weight of the absorbent structure.

10. An absorbent article comprising at least in part the absorbent structure of claim 8.

11. An absorbent article as set forth in claim 10 wherein the absorbent article is one of a diaper, a training pant, a feminine hygiene product and an incontinence product.

12. An absorbent material as set forth in claim 1 wherein the cross-linked polymer comprises at least about 75 weight percent cationic polymer.

13. A surface treated absorbent material comprising a superabsorbent material having a gel stiffness index of at least about 0.8, said superabsorbent material comprising a cross-linked polymer comprising at least about 75 weight percent anionic polymer, and a surface treatment applied to the superabsorbent material, said surface treatment comprising a water soluble non-cross-linked polymer comprising at least about 50 weight percent cationic polymer.

14. A surface treated absorbent material as set forth in claim 13 wherein the surface treated absorbent material has a gel bed permeability (GBP) under load as determined by a Gel Bed Permeability Under Load Test of at least about 5 200×10^{-9} cm².

15. A surface treated absorbent material as set forth in claim 14 wherein the surface treated absorbent material has a gel bed permeability (GBP) under load as determined by the Gel Bed Permeability Under Load Test of at least about 5 400×10^{-9} cm².

16. A surface treated absorbent material as set forth in claim 13 wherein the superabsorbent material has a centrifuge retention capacity (CRC) as determined by a Centrifuge Retention Capacity Test of at least about 20 g/g.

17. A surface treated absorbent material as set forth in claim 13 wherein the superabsorbent material has a centrifuge retention capacity (CRC) as determined by a Centrifuge Retention Capacity Test of at least about 25 g/g.

18. A surface treated absorbent material as set forth in claim 13 wherein the cationic polymer is polyvinyl amine.

19. A surface treated absorbent material as set forth in claim 13 wherein the concentration of cationic polymer is in the range of about 0.05 to about 5 weight percent of the superabsorbent material.

20. A surface treated absorbent material as set forth in claim 13 wherein the superabsorbent material has a gel stiffness index of at least about 0.85.

21. A surface treated absorbent material as set forth in claim 13 wherein the surface treatment is applied to substantially the entire outer surface of the superabsorbent material.

22. A surface treated absorbent material as set forth in claim 13 wherein the water soluble non-cross-linked

polymer of the surface treatment comprises at least about 70 weight percent cationic polymer.

23. A surface treated absorbent material as set forth in claim 13 wherein the surface treatment further comprises in the range of about 0.5 to about 5 grams weight of water per 1 gram weight of superabsorbent material.

24. A surface treated absorbent material as set forth in claim 13 wherein the surface treated absorbent material has a free swell gel bed permeability as determined by a Free Swell Gel Bed Permeability Test of at least about $2,000 \times 10^{-9}$ cm².

25. A surface treated absorbent material as set forth in claim 24 wherein the surface treated absorbent material has a gel bed permeability (GBP) under load as determined by a Gel Bed Permeability Under Load Test of at least about 200×10^{-9} cm².

26. An absorbent material comprising at least in part a cross-linked polymer, said absorbent material having a centrifuge retention capacity as determined by a Centrifuge Retention Capacity Test of at least 20 g/g and a free swell gel bed permeability as determined by a Free Swell Gel Bed Permeability Test of at least about $2,500 \times 10^{-9}$ cm².

27. An absorbent material as set forth in claim 26 wherein the absorbent material has a centrifuge retention capacity as determined by a Centrifuge Retention Capacity Test of at least about 25 g/g.

28. An absorbent material as set forth in claim 26 wherein the cross-linked polymer comprises at least about 75 weight percent anionic polymer.

29. A method of making a surface treated absorbent material, said method comprising:

solubilizing a water soluble cationic polymer in water to form an aqueous solution; and

5 applying the aqueous solution to the outer surface of a superabsorbent material having a gel stiffness of at least about 0.8 and comprising a cross-linked polymer comprising at least about 75 weight percent anionic polymer.

30. A method as set forth in claim 29 further comprising removing water from the aqueous solution following application of the solution to the superabsorbent material to thereby leave cationic polymer on the surface of the 5 superabsorbent material.

31. A method as set forth in claim 29 wherein the concentration of cationic polymer is in the range of about 0.05 to about 10 weight percent of the superabsorbent material.

32. A method as set forth in claim 29 wherein the solubilizing step comprises solubilizing the cationic polymer in at least about 0.5 to at least about 10 grams weight of water per 1 gram weight of superabsorbent material.

33. A method as set forth in claim 29 wherein the step of applying the aqueous solution to the outer surface of the superabsorbent material comprises mixing the aqueous solution and superabsorbent material together until the superabsorbent 5 material has absorbed at least a portion of the aqueous solution.

34. A surface treated absorbent material comprising a superabsorbent material having a gel stiffness index of at least about 0.8, said superabsorbent material comprising a

cross-linked polymer comprising at least about 75 percent by weight cationic polymer, and a surface treatment applied to the superabsorbent material, said surface treatment comprising a water soluble non-cross-linked polymer comprising at least about 50 percent by weight anionic polymer.

35. A method of making a surface treated absorbent material, said method comprising:

solubilizing a water soluble anionic polymer in water to form an aqueous solution; and

5 applying the aqueous solution to the outer surface of a superabsorbent material having a gel stiffness index of at least about 0.8 and comprising a cross-linked polymer comprising at least about 75 weight percent cationic polymer.

36. A method as set forth in claim 35 further comprising removing water from the aqueous solution following application of the solution to the superabsorbent material to thereby leave anionic polymer on the surface of the 5 superabsorbent material.

37. A method as set forth in claim 35 wherein the step of applying the aqueous solution to the outer surface of the superabsorbent material comprises mixing the aqueous solution and superabsorbent material together until the superabsorbent 5 material has absorbed at least a portion of the aqueous solution.

38. A method as set forth in Claim 35 further comprising removing water from the aqueous solution following application of the solution to the superabsorbent material to thereby leave anionic polymer on the surface of the 5 superabsorbent material.